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10/612,569	07/02/2003	Peter Traneus Anderson	129137NV (14291US01)	2431

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EXAMINER
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HOLLOWAY III, EDWIN C

ART UNIT	PAPER NUMBER
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2612

MAIL DATE	DELIVERY MODE
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01/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/612,569

**Applicant(s)**

ANDERSON, PETER TRANEUS

**Examiner**

Edwin C. Holloway, III

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 13, 21, 28-38 and 42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 13, 21, 28-38, 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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**EXAMINER'S RESPONSE**

1. Applicant's submission filed on 10-26-07 has been entered. The examiner has considered the new presentation of claims and applicant's arguments in view of the disclosure and the present state of the prior art. Claims 1-7, 13, 21, 28-38, 42 are pending. It is the examiner's position that the claims are unpatentable for the reasons set forth in this Office action:

***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the tracking system in at least independent claims 1, 13, 28 must be shown or the feature(s) canceled from the claim(s). Further, a flow chart of method steps in at least independent claims 8, 15, 21, and 22 should be shown in the drawings. Also, the controller of claims 6, 7 and 34 must be shown or canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be

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labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1-7, 13, 21, 28-38 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Independent claims 1, 13, 21 and 28 have been amended to add the limitation of "determining position and orientation of said transponder in relation to a reference coordinate system," but an enabling disclosure of this limitation in the detailed description is not present in the specification as originally filed. Page 2, par. 06 of the specification refers to reference to coordinate system, but lacks an enabling disclosure of a tracking system or method for determining position and orientation of a transponder in relation to a reference coordinate system. Page 2, par. 07 of the specification refers to determining position, but lacks an enabling disclosure of a tracking system determining position and orientation of a transponder in relation to a reference coordinate system. Page 6, par. 25 of the specification says that characteristics of the response signal may be used to calculate the position, orientation, and gain of the transponder, but lacks an enabling disclosure of a tracking

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system determining position and orientation of a transponder in relation to a reference coordinate system. The specification lacks details of a system or method for determining position and orientation from the transponder signal in relation to a reference coordinate system.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-7, 13, 28-38 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-7, 13, 28-38 are directed to a transponder, but include significant tracking system limitations in the body of the claim. The preamble suggests the system is only an intended, but is contradicted by the body of the claim including tracking system limitations suggesting the claims are directed to the combination of a transponder and tracking system.

Claim 42 is incomplete because it depends from a canceled

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claim. For the prior art rejections, claim 42 will be groped with claims 21 and 28.

***Claim Rejections - 35 USC § 102 & 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 21, 28-29, 32-34 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin'066 (US005443066A) in combination with Jones (US 4160971) or Arndt (US006097189A) and further in view of Kip (US 4196418).

Regarding claims 21 and 28, Dumoulin'066 discloses RF tracking system where an RF transmitter or transponder 200 placed in a patients body is tracked to determine position and orientation in relation to patient anatomy by determining a location that is superimposed on a medical image in col. 3 lines 55-67. This is provided by overlaying coordinate system (x, y, z, theta, phi) in incorporated applications 07/753563 07/753565 corresponding to US Patents 5377678 and 5211165. The transmitter 200 includes rectifying diodes 230 to rectify a received first signal (activation signal) at a first radiofrequency and an oscillator to convert the rectified signal to a second radiofrequency different from the first radiofrequency. The second radiofrequency is received by coils 160 of the tracking system to determine position and orientation

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of RF transmitter 200. See col. 4 lines 19-53. This allows tracking of an invasive device with RF signals.

Jones discloses an analogous art transponder for medical applications with single diode 12 as a nonlinear device and one or more parallel resonant circuits to convert an interrogation frequency into one or more response frequencies that are used to identify the transponder. Capacitance is varied by use of a varactor diode and/or capacitor 11 varying with a measured quantity. See the abstract, col. 1 and col. 7 lines 25-44.

Arndt discloses an analogous art transponder with nonlinear load such as a diode to provide harmonic response to avoid position tracking inaccuracies and false detection in col. 2. In other words, the transponder receives a signal at a first frequency that is converted or varied by a passive non linear load (diode) to provide a response signal at a second frequency. Position is determine relative to an X-Y-Z coordinate system in cols. 6 and 8. The transponder may includes resonant circuit including coil and capacitor in parallel with the diode to tune the frequency. Medical use is at least suggested by the transponder in hand in fig. 7.

Kip discloses a passive transponder with a switch in series with a non-linear element such as a diode or capacitor. The switch is a transistor controlled by a logic circuitry to be



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periodically switched in a coded manner to provide an Identification code in an easily detectable manner. First, second and third frequencies may be provided, so the response data is at a frequency or frequencies different from the interrogation. See fig. 5, col. 2 line 58 - col. 3 line 6 and col. 4 lines 31-60.

Regarding claims 21 and 28, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in Dumoulin'066 the diode circuit of Jones as a simple passive device to convert the activation frequency to a second frequency for tracking the transponder. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in Jones the determining of position and orientation in relation to patient anatomy by determining a location that is superimposed on a medical image in Dumoulin'066 to interactively track the transponder through the subject without requiring other medical diagnostic images. Varying capacitance/frequency would have been obvious in view of Jones disclosing this to communicate a measured value. Transmitting first and second frequencies would have been obvious because the at least part of  $f_1$  would be reflected by the resonant circuit of Jones. Regarding claims 28-29 and 32, Jones includes a switch 12 in

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parallel with coil 10. Regarding claims 42, Jones includes coil transmit/receive and rectifier diode. Note that Jones includes multiple parallel resonant circuits providing capacitors in parallel with the transmission coil.

Regarding claims 21 and 28, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in Dumoulin'066 the diode circuit of Arndt as a simple passive device to convert the activation frequency to a second frequency for tracking the transponder.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in Arndt the determining of position and orientation in relation to patient anatomy by determining a location that is superimposed on a medical image in Dumoulin'066 to interactively track the transponder through the subject without requiring other medical diagnostic images. Varying capacitance/frequency would have been obvious in view of Arndt disclosing this the diode varying such. Transmitting first and second frequencies would have been obvious because the at least part of  $f_1$  would be reflected by the resonant circuit of Arndt. Regarding claims 28-29 and 32, Arndt includes a switch 202 in parallel with coil. Regarding claim 42, Arndt includes coil transmit/receive and rectifier diode. Note that Arndt includes parallel resonant

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circuits providing a capacitor in parallel with the transmission coil.

Regarding claims 21, 28-29, 32-34 and 42, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the combination applied above a controller controlling a switch in series with a diode or capacitor as disclosed in Kip so that the transponder transmits data that is easily detectable. First and second frequencies would have been obvious in view of Kip to provide easily detectable encoded data for identifying the transponder. A transistor switch would have been obvious in view of Kip to provide easily detectable signals.

9. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin'066 (US005443066A) in combination with Jones (US 4160971) or Arndt (US006097189A) and further in view of Kip (US 4196418) as applied above and further in view of Murdoch '583 (US 5153583).

Murdoch '583 discloses a transponder with a synchronous rectifier in cols. 11 and 14 to provide simple and readily integrated rectification. A transistor for modulation switching in the integrated circuit is provided in fig. 4.

It would have been obvious to one of ordinary skill in the

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art at the time the invention was made to have included in the combination applied above the synchronous rectifier and/or the transistor of Murdoch '583 to allow integrated circuit rectification/switching.

10. Claims 1-7, 13 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin'066 (US005443066A) in combination with Jones (US 4160971) or Arndt (US006097189A) and further in view of Kip (US 4196418) as applied above and further in view of Janning (US005241923A).

Regarding claims 1-3 and 35-38, Jones includes a diode 12 in parallel with coil 10.

Regarding claim 13 Jones includes a diode 12 in parallel with coil 10 and a core would have been obvious in view of the open center of Doumoulin'066.

Regarding claims 1-3 and 35-38, Arndt includes a diode 202 in parallel with coil. Regarding claim 13, Arndt includes a diode 202 in parallel with coil and a core would have been obvious in view of the open center of Doumoulin'066. Regarding claims 8-10 and 39-40, Arndt includes coil transmit/receive and rectifier diode. Note that Arndt includes parallel resonant circuits providing a capacitor in parallel with the transmission coil.

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Janning discloses an analogous art transponder with a nonlinear device having terminals forming / connected to coils wrapped around / attached to a core. See figs. 15A-B and col. 17 lines 53-65. The nonlinear device is a rectifier (diode in col. 16 line 25).

Regarding claim 1, 4-7 and 13, Kip discloses a controller switching a resonant circuit including a nonlinear device to transmit data at that is insensitive to spurious effects. The data may be transmitted at a frequency or frequencies different from interrogation.

Regarding claims 1-7, 13 and 35-38, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the combination applied above coil/rectifier terminals attached a core as disclosed in Janning as an obvious alternative version of a transponder that may be useful for narrowband operation.

### ***Response to Arguments***

11. Applicant's arguments filed 10-26-07 have been fully considered but they are not persuasive and or moot in view of new grounds of rejection.

Regarding the drawings, the argument that the system is "for use" in the preamble of the claims or that the switch is

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"controlled by the controller" does not remove these limitations from the body of claims. Correction is required.

The argument that the claims are enabled by pars. 6-7 stating that determination of position and orientation in relation to a references coordinate system is known is not persuasive because these paragraphs state in the background of the invention state that such may be used, but not that it is well known in the prior art. Further, the specification lacks any particular transponder tracking system or method details to provide an enabling disclosure of the claimed invention. No particular tracking system structure is shown in the drawings or described in the text that would enable making or using the claimed invention.

Regarding the 112, second paragraph rejection, "for use" in the preamble does not remove the system limitations from the body of the claim.

A new 112 rejection was necessitated by the amendment.

The arguments regarding the prior art rejections are moot in view of the new grounds of rejection necessitated by the amendment.

#### **Conclusion**

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS**

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**ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### **CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edwin C. Holloway, III whose telephone number is (571) 272-3058. The examiner can normally be reached on M-F from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Zimmerman, can be reached on (571) 272-3059.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system,


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see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EH

1/6/08

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EDWIN C. HOLLOWAY, III  
PRIMARY EXAMINER  
ART UNIT 2612